

Micro-Lid For Sealing Sample Reservoirs of micro-Extraction Systems



Completed Technology Project (2013 - 2014)

Project Introduction

We propose to develop a proof-of-concept **micro-Lid (μ Lid)** to tightly seal a micro-sampler or micro-extraction system. Fabrication of **μ Lid** would be conducted in the Detector Development Laboratory (DDL) using Micro-Electrical-Mechanical-Systems (MEMS) processes at NASA GSFC. The goal will be to fabricate **μ Lid** such that it's cantilever is actuated by a mismatch in coefficient of thermal expansion

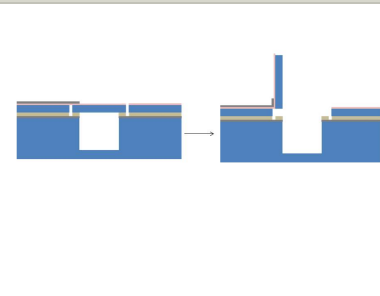
The proposed **μ Lid** system is in effect an attempt to miniaturize an extraction system to a chip-cup system with integrated heaters capable extremley hot temperatures.

The **μ Lid** system will be composed of a silicon cup with a silicon lid, acting as the **μ Lid**. The hinge structure supporting **μ Lid** will be a bilayer composed of metal bilayer that upon a temperature change will actuate the bimetallic cantilever.

Anticipated Benefits

μ Lid is an Early Stage Innovation project that will help first mature this technology to eventually merge with other center invested technologies. Moreover, coupling **μ Lid** to other on-center microfluidic analytical technologies will allow for further technology maturation. **μ Lid** can integrate with other microfluidic instruments to form a more complete miniaturized system.

This projects helps achieve NASA's goal in miniaturization of spaceflight instruments to allow for low cost and enable the opportunity for long range missions.



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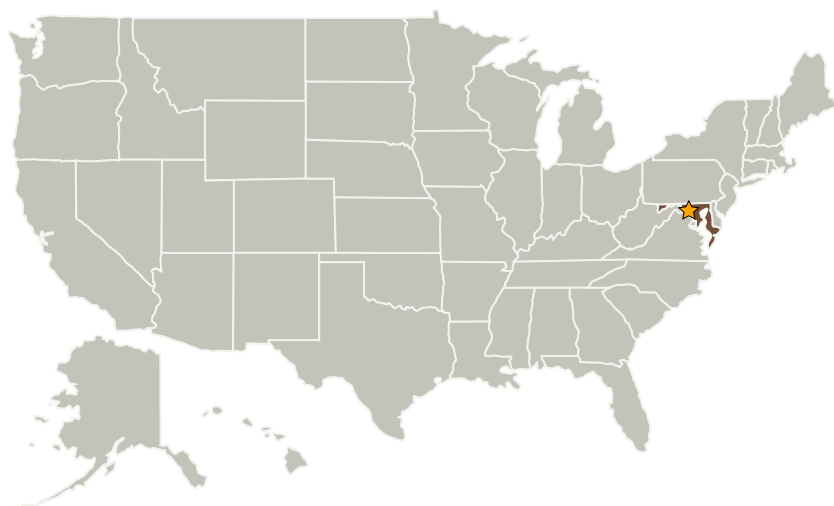
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Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Goddard Space Flight Center (GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations

Maryland

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

Project Manager:

Terry Doiron

Principal Investigator:

Manuel A Balvin

Co-Investigators:Michael R Callahan
George Manos

Technology Areas

Primary:

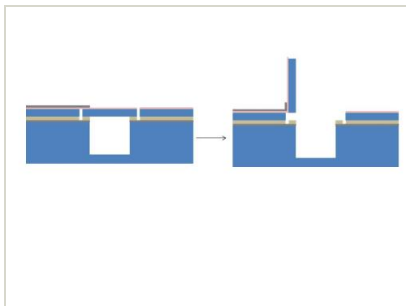
- TX04 Robotic Systems
 - └ TX04.3 Manipulation
 - └ TX04.3.4 Sample Acquisition and Handling

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Images



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Micro-Lid For Sealing Sample Reservoirs of micro-Extraction Systems Project
(<https://techport.nasa.gov/image/4014>)

Project Website:

<http://sciences.gsfc.nasa.gov/sed/>